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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jong-Soo Baek

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THE NATH LAW GROUP
112 South West Street
Alexandria, VA 22314

EXAMINER

EOM, ROBERT J

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/551,784	Applicant(s) BAEK ET AL.	
	Examiner ROBERT EOM	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 11-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 11-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/05/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-5 and 11-17 have been considered but are moot in view of the new ground(s) of rejection.

The applicant has amended independent claims and 11 to further define the structural particulars of the temperature control block and reaction tubes, not previously presented, for consideration upon merits for patentability.

2. Applicant's arguments filed 01/21/2010 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the waveguide having an open structure, with lens and refractive mirror located at both ends of the light waveguide; and the light irradiation source being capable of providing at the edges of the reaction tube plate, more than 85% of light intensity in the center of the reaction tube plate) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument that De Maeyer wt al. is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977

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F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, De Maeyer et al. discloses an apparatus for investigating chemical reactions by optical detection through a temperature controlled sample cell. Additionally, the applicant's alleged functional and structural differences rely on specific configurations of optical detection systems not recited within the instant claims.

Examiner reminds the applicant that the manner in which an apparatus operates is not germane to the issue of patentability of the apparatus itself. *Ex parte Wikdahl* 10 USPQ 2d 1546, 1548 (BPAI 1989); *Ex parte McCullough* 7 USPQ 2d 1889, 1891 (BPAI 1988); *In re Finsterwalder* 168 USPQ 530 (CCPA 1971); *In re Casey* 152 USPQ 235, 238 (CCPA 1967). Furthermore, apparatus claims cover what a device is, not what a device does. *Hewlett-Packard Co. v. Bausch & Lomb Inc.* 15 USPQ 2d 1525 (Fed. Cir. 1990); *Demaco Corp. v. F. Von Langsdorf Licensing Ltd.* 7 USPQ 2d 1222, 1224-1225 (Fed. Cir. 1988). If certain structures allow the device to operate in a given manner, then the apparatus claims should positively recite the structures that allow it to act in that manner. Merely claiming that a device performs a given function is not sufficient for overcoming prior art references which already teach the same structures of the claimed apparatus.

As the cited prior art teaches the recited structures of the instant application, the rejection is maintained.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-5 and 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (referred herein as AAPA, see:

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Fig. 2 and Fig. 5), in view of De Maeyer et al. (USP 4,076,420, referred herein as Maeyer).

Regarding claims 1, 2, and 17, AAPA discloses a real-time monitoring apparatus for biochemical reaction (**Fig. 2**) comprising: a temperature control block comprising a thermoelectric element (**2**) and a heat transmission block (**3**) which supply heat into a plurality of reaction tubes (**4**); a light irradiation source comprising a lamp with a first ellipsoidal reflecting mirror or a parabolic mirror (**5**) and a condensing lens (**17**); and an optical system comprising a receiving part (**12**).

AAPA does not explicitly disclose a rectangular or round optical waveguide or a focusing lens.

Maeyer teaches an apparatus for investigating fast chemical reactions by optical detection the light irradiation source comprising an optical waveguide (**Fig. 3**) comprising: a light source (**Q**) which provides light which is focused with a series of lenses (**L5 and L9**), passed through a monochromator (**M**), passed through a flexible light pipe (**G**), directed through a series of optics to the cell chamber (**K**), and then detected with a series of detectors (**D**). It would have been obvious to one having ordinary skill in the art at the time of the invention to incorporate a focusing lens and waveguide into the monitoring apparatus of AAPA, as taught by Maeyer, since doing so provides for light from the light source to be fit to the shape of the entrance aperture of the sample cells (**C9/L31-34**).

Regarding claim 3, modified AAPA discloses all of the claim limitations as set forth above, but the reference does not explicitly disclose the refractive index of medium of the optical waveguide is 1.35 ~ 2.0. As the phase velocity is a variable that can be modified by adjusting the said refractive index, with said phase velocity decreasing as the refractive index is increased, the precise refractive index would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed refractive index cannot be considered critical. Accordingly one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the refractive index of modified AAPA to obtain the desired phase velocity (In re Boesch, 617 F2D. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (In re Aller, 105 USPQ 223).

Regarding claims 4 and 5, modified AAPA discloses all of the claim limitations as set forth above. While, modified AAPA does not explicitly disclose the particular shape of the optical waveguide having a rectangular or round shape, Maeyer discloses that the rectangular cross section of the light may be transformed into a round one to correspond to the shape of the sample cell entrance aperture (**C9/L31-34**). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to select the appropriately shaped waveguide (circular, rectangular, etc.) to provide for a light

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cross section which corresponds to the cross section of the aperture of the sample cell, whether round or rectangular.

Regarding claims 11-13 AAPA discloses a real-time monitoring apparatus for biochemical reaction (**Fig. 2**) comprising: a temperature control block comprising a thermoelectric element (**2**) and a heat transmission block (**3**) which supply heat into a plurality of reaction tubes (**4**); a light irradiation source comprising a lamp with a first ellipsoidal reflecting mirror or a parabolic mirror (**5**) and a condensing lens (**17**); and an optical system comprising a receiving part (**12**) and two or more second reflecting mirrors (**18**).

AAPA does not explicitly disclose a rectangular or round optical waveguide or a focusing lens.

Maeyer teaches an apparatus for investigating fast chemical reactions by optical detection the light irradiation source comprising an optical waveguide (**Fig. 3**) comprising: a light source (**Q**) which provides light which is focused with a series of lenses (**L5 and L9**), passed through a monochromator (**M**), passed through a flexible light pipe (**G**), directed through a series of optics to the cell chamber (**K**), and then detected with a series of detectors (**D**). It would have been obvious to one having ordinary skill in the art at the time of the invention to incorporate a focusing lens and waveguide into the monitoring apparatus of AAPA, as taught by Maeyer, since doing so provides for light from the light source to be fit to the shape of the entrance aperture of the sample cells (**C9/L31-34**).

Regarding claim 14, modified AAPA discloses all of the claim limitations as set forth above, but the reference does not explicitly disclose the refractive index of medium of the optical waveguide is 1.35 ~ 2.0. As the phase velocity is a variable that can be modified by adjusting the said refractive index, with said phase velocity decreasing as the refractive index is increased, the precise refractive index would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed refractive index cannot be considered critical. Accordingly one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the refractive index of modified AAPA to obtain the desired phase velocity (In re Boesch, 617 F2D. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (In re Aller, 105 USPQ 223).

Regarding claims 15 and 16, modified AAPA discloses all of the claim limitations as set forth above. While, modified AAPA does not explicitly disclose the particular shape of the optical waveguide having a rectangular or round shape, Maeyer discloses that the rectangular cross section of the light may be transformed into a round one to correspond to the shape of the sample cell entrance aperture (**C9/L31-34**). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to select the appropriately shaped waveguide (circular, rectangular, etc.) to provide for a light

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cross section which corresponds to the cross section of the aperture of the sample cell, whether round or rectangular.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT EOM whose telephone number is (571)270-7075. The examiner can normally be reached on Mon.-Thur., 9:00am-5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1267. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tony G Soohoo/
Primary Examiner, Art Unit 1797

/R. E./
Examiner, Art Unit 1797